Name: ______________________________

GCSE (1 – 9)

Indices

Instructions

- Use **black** ink or ball-point pen.
- Answer all Questions.
- Answer the Questions in the spaces provided
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

Information

- The marks for each Question are shown in brackets
– *use this as a guide as to how much time to spend on each Question.*

Advice

- Read each Question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every Question.
- Check your answers if you have time at the end

1 (a) Simplify $x^8 \times x^3$

....
(1)

(b) Simplify $(5y)^3$

....
(1)

(c) Simplify $\frac{w^7}{w^4}$

....
(1)

(Total for question 1 is 3 marks)

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2 (a) Simplify $a^9 \times a^4$

....
(1)

(b) Simplify $(4b^2c)^3$

....
(2)

(c) Simplify $d^9 \div d^4$

....
(1)

(Total for question 2 is 4 marks)

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3 (a) Simplify $2m^2 \times 5n^6$

....
(1)

(b) Simplify $15p^3 \div 3p^4$

....
(2)

(Total for question 3 is 3 marks)

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4 (a) Simplify $(t^3)^4$

……………………………………
(1)

(b) Simplify $12m^2n^6 \div 3mn^4$

……………………………………
(2)

(Total for question 4 is 3 marks)

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5 Simplify $5m^2n^3 \times 3mn^4$

……………………………………

(Total for question 5 is 2 marks)

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6 (a) Write down the value of 5^{-3}

…………………………
(1)

(b) Write down the value of 5^0

…………………………
(1)

(Total for question 6 is 2 marks)

---

7 Work out the value of $5^2 \times 2^3$

……………………………………

(Total for question 7 is 1 mark)

8 Write down the value of 2^{-3}

……………………

(Total for question 8 is 1 mark)

---

9 $y^2 \times y^a = y^7$

(a) Find the value of *a*.

……………………

(1)

$(y^4)^b = y^{12}$

(b) Find the value of *b*.

……………………

(1)

(Total for question 9 is 2 marks)

---

10 (a) Given $\dfrac{x^6}{x^a} = x^8$

Find the value of *a*.

$a =$ ……………………

(1)

(b) Simplify $(2m^2)^4$

……………………

(2)

(Total for question 10 is 3 marks)

11 (a) Write $\frac{3^4 \times 3^5}{3^2}$ as a power of 3

....
(2)

(b) Write down the value of 3^{-3}

....
(1)

(c) Write down the value of 3^0

....
(1)

(Total for question 11 is 4 marks)

---

12 Work out the value of $\frac{2^9 \times 2^{-2}}{2^4}$

....

(Total for question 12 is 2 marks)

---

13 Work out the value of $(2^2)^3$

....

(Total for question 13 is 1 mark)

---

14 (a) Simplify $p^3 \times p^5$

....

(1)

(b) Simplify $(4ab^2)^3$

....

(2)

(c) Simplify $\dfrac{16m^7n^3}{4m^3n}$

....

(2)

(Total for question 14 is 5 marks)

---

15 $1000^4 = 10^x$

Find the value of x.

....

(Total for question 15 is 1 mark)

---

16 Work out the value of $\dfrac{2^3 \times 2}{2^5}$

....

(Total for question 16 is 2 marks)

---

17 Write down the reciprocal of 8

....

(Total for question 17 is 1 mark)

---

18 (a) Simplify $9p^3 \times 2p^{-2}$

…..........................…

(1)

(b) Simplify $(5x^3y^2)^3$

…..........................…

(2)

(c) $p^3 \times p^5 = p^{12} \times p^y$

Find the value of y

…..........................…

(2)

(Total for question 18 is 5 marks)

---

19 $10^x = 1$

Write down the value of x.

…..........................…

(Total for question 19 is 1 mark)

---

20 Write $5^4 \times 5$ as a power of 5

…..........................…

(Total for question 20 is 1 mark)

---

21 Write down the reciprocal of 2

…..........................…

(Total for question 21 is 1 mark)

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22 (a) Simplify $5c^2d^3 \times 2d$

....
(1)

(b) Write 64×4^5 as a power of 4

....
(2)

(c) Simplify $p^3 \times (p^5)^2$

....
(2)

(Total for question 22 is 5 marks)

---

23 $p^9 \times p^5 = p^x$

Write down the value of x

....

(Total for question 23 is 1 mark)

---

24 Write down the reciprocal of $\frac{1}{3}$

....

(Total for question 24 is 1 mark)

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25 Simplify $\dfrac{10p^3q^5r}{4p^3q^6}$

....

(Total for question 25 is 2 marks)